

NORTH PACIFIC CENOZOIC DIATOM ZONATION TOWARDS THE NEXT MILLENNIUM: MODERN STATE AND PROSPECTS OF DETALIZATION

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During 20 years since 1973, the middle Miocene to Quaternary North Pacific diatom zonation was successfully used for stratigraphic subdivision and correlation of the marine Cenozoic in the middle-to-high latitudes of this region where diatoms are the main group of microplankton in the Neogene. However, until recently the precise absolute age of diatom datum levels older than the latest Miocene was unknown. An Oligocene to early Miocene zonation was also absent in general. In 90s, based on materials of Ocean Drilling Project Leg 145 in the North Pacific the absolute age of over 40 diatom datum levels from the magnetostratigraphic calibration was estimated for the first time. Also the Oligocene through early Miocene diatom zonation starting at 30.2 Ma was proposed. The additional lower Oligocene zone proposed later has allowed to extend the diatom scale down through the earliest Oligocene. Thus, now diatom zonation is a real instrument for subdivision and correlation of the marine Cenozoic in the North Pacific region. Among the ways and methods of the diatom zonation detalization it should be noted: 1) studies on direct correlation of diatom datum levels with magnetostratigraphy in complete sections (first of all, for the Oligocene and lower Miocene); 2) addition checking and control of datum levels; 3) detailed studies in systematic and taxonomy of diatoms; 4) quantitative methods (paleotemperature curves based on diatom temperature index; ratio between forms with different paleoecological characteristics); 5) determination and tracing of provinces with different diatom assemblages based on factor analysis.